

Most important aerospace outcomes of the WRC-15

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Radiocommunication service

KEY POINTS to remember



- Any flying object in air or outer space **without a proper radiocommunication channel** is **just a dangerous piece of flying metal** (debris)
- It is important to ensure that *any* [aeronautical/sub-orbital/outer space] radio operation **avoids harmful interference (HI) to/from** other systems and services
- It is important to ensure the **availability and protection from harmful interference** of the frequencies provided for **distress and safety purposes**
- **Is there a solution ?**
YES – Apply and Follow the ITU Radio Regulations !

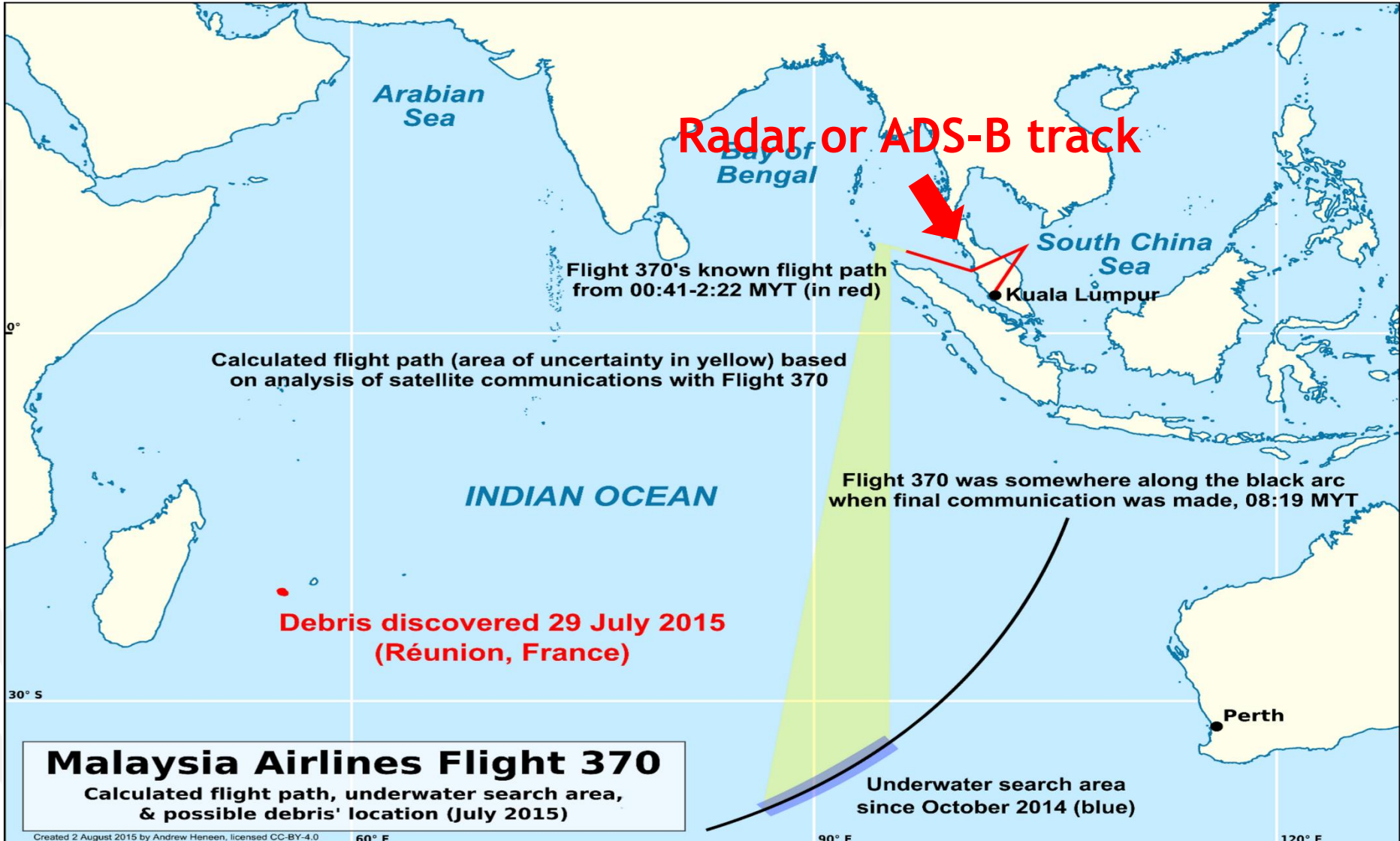
ITU Radio Regulations

- Intergovernmental Treaty, *legal bindings* on all Member states, governing the *use of spectrum/orbit resources by all radiocommunication services*
- Define the *rights* and *obligations* of Member states in respect of the use of spectrum/orbit resources
- The ITU Radio Regulations incorporates the decisions of World Radiocommunication Conference (**WRC**)



WRC-15 Agenda Item - AI.GFT

MH 370 case – 08.MARCH.2014



Global flight tracking (GFT) for civil aviation

➤ **ITU PP conference (PP-14) OCT.2014**

*resolves to instruct **WRC-15***

to include in its agenda, **as a matter of urgency**, the consideration of **GFT**, including, if appropriate, and consistent with ITU practices, various aspects of the matter, taking into account ITU-R studies

- *instructs the ITU Secretary-General*
 - to bring this resolution to the attention of WRC-15 and ICAO,
- *instructs the Director of the Radiocommunication Bureau*
 - to prepare a specific report on the matter as referred to in *resolves* above for consideration by WRC-15

International Telecommunication Union



WORLD RADIOCOMMUNICATION CONFERENCE 2015

GENEVA, SWITZERLAND
2 – 27 NOVEMBER 2015



15  1865
2015

www.itu.int/go/ITU-R/WRC-15



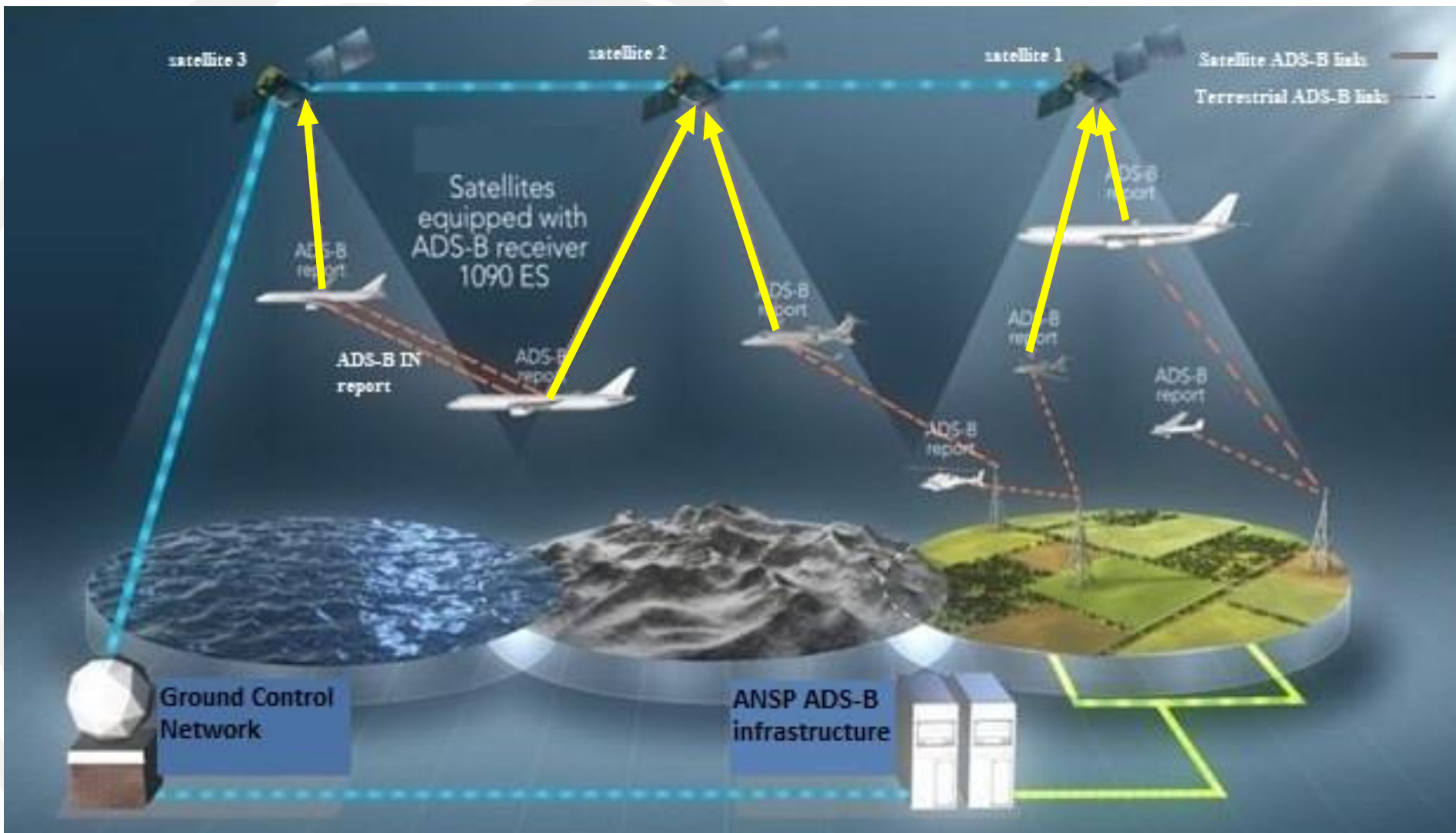
RES-425 [COM4/2] (WRC-15) - Use of the frequency band 1 087.7-1 092.3 MHz by the aeronautical mobile-satellite (R) service (Earth-to-space) to facilitate **global flight tracking (GFT)** for civil aviation

The frequency band 1 087.7-1 092.3 MHz is also allocated to the aeronautical mobile satellite (R) service (Earth-to-space) on a PRIMARY basis, limited to the space station reception of Automatic Dependent Surveillance-Broadcast (ADS-B) emissions from aircraft transmitters, that operate in accordance with recognized international aeronautical standards...

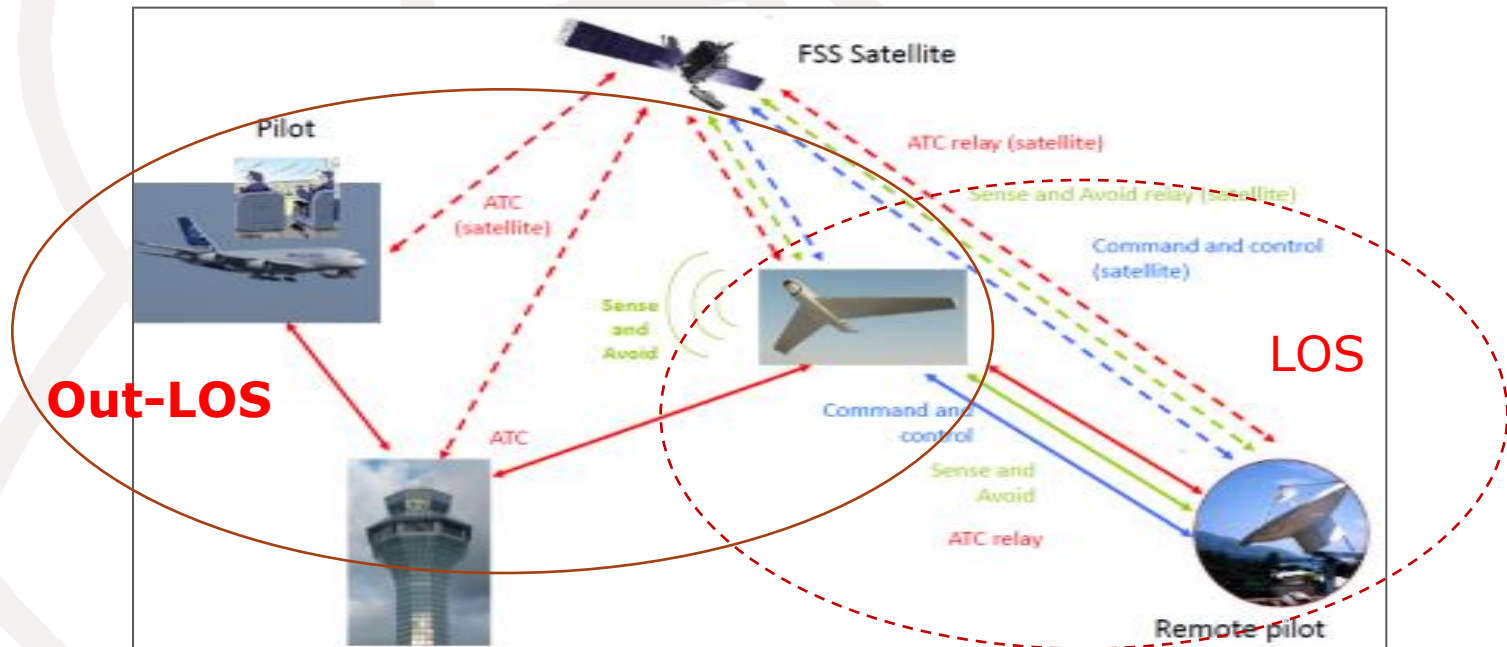
- **RES-425** will protect essential frequency band for **real-time GFT** and **surveillance** of aircraft through ADS-B over satellite
- *Current ATC can't go beyond the LOS of terrestrial radar or ADS-B stations, leaving the vast majority of the planet without ATC traffic surveillance*
- This WRC-15 historical decision about the **GFT** will extend ATC surveillance coverage of ADS-B equipped aircraft from the *30 percent terrestrial coverage* available today to **100 percent (global coverage) of the earth's surface**

WRC-15 AI.GFT Decision

Seamless satellite based ADS-B – GFT - world wide



AI.1.5 - Unmanned Aircraft Systems (**UAS**) – Consider use of FSS bands for control and non-payload communications (**CNPC**) of UAS in *non-segregated* airspaces in accordance with RES 153 (WRC-12)



- To identify conditions under which systems operating in the FSS could provide UA CNPC links
- No change, on the basis of concerns about the ability of FSS to provide a safety service

1. That the technical and regulatory actions should be limited to the case of UAS using satellites, as studied, and not set a precedent that puts other aeronautical safety services at risk.
2. That all frequency bands which carry aeronautical safety communications need to be clearly identified in the RR.
3. That the assignments and use of the relevant frequency bands have to be consistent with No. **4.10** (safety services...).
4. Knowledge that any assignment operating in those bands:
 - a) is in conformity with technical criteria of the RR;
 - b)*has been successfully recorded* in the **International Master Frequency Register**
5. That interference to systems is reported in a transparent manner and addressed in the appropriate time-scale.
6. That realistic worst case condition with inclusion of a safety margin can be applied during compatibility studies.
7. *That any operational considerations for UAS will be handled in the ICAO and not in the ITU*

RES-155 [COM4/5] (WRC-15) Regulatory provisions related to earth stations on board of **UAS** which operate with geostationary-satellite networks in the fixed-satellite service in certain frequency bands for the control and non-payload communications (**CNPC**) of UAS in **non-segregated airspaces** *very complex RES with 19 resolves and 2 Annexes...*

UAS CNPC links will operate in accordance with international *Standards and Recommended Practices and Procedures* established in accordance with the *Convention on International Civil Aviation*

1.that assignments to stations of geostationary FSS satellite networks operating in the frequency bandsGHz (space-to-Earth) and GHz (Earth-to-space), may be used for UAS CNPC links in non-segregated airspace

2.that earth stations in motion on board UAS may communicate with the space station of a geostationary FSS satellite network operating in the frequency bands listed above...

- **RESOLUTION-424** [COM4/1] (WRC-15)
Use of *Wireless Avionics Intra-Communications* in the frequency band 4 200-4 400 MHz
- **RESOLUTION-763** [COM5/7] (WRC-15)
Stations on board sub-orbital vehicles
- **RESOLUTION-659** [COM6/19] (WRC-15)
Studies to accommodate requirements in the space operation service for *non-geostationary satellites with short duration missions*

If you wish to learn more about

- World Radiocommunication Conference (**WRC**)

<http://www.itu.int/ITU-R/go/wrc/en>

Free online access to ITU-R key documents

- ***ITU-Radio Regulations @ 2012***

<http://www.itu.int/pub/R-REG-RR-2012>

- ***ITU-R Recommendations***

<http://www.itu.int/publ/R-REC/en>



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THANK YOU

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